

ARMY PROGRAMS

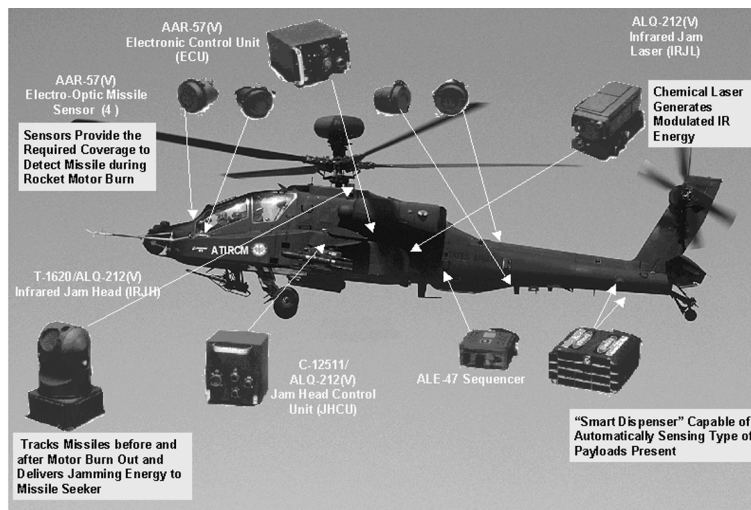
Suite of Integrated Infrared Countermeasures (SIIRCM) and Common Missile Warning System (CMWS, AN/AAR-57) Includes: Advanced Threat Infrared Countermeasures (ATIRCM, AN/ALQ-212)

The Suite of Integrated Infrared Countermeasures (SIIRCM)/Common Missile Warning System (CMWS) is intended to enhance individual aircraft survivability against advanced infrared (IR) guided missiles. The SIIRCM concept of IR protection includes new IR flare decoys, the Advanced Infrared Countermeasures Munitions, and passive IR features. These passive IR features include host platform modifications such as engine exhaust/heat suppression and special coatings intended to reduce the platform IR signature.

The Advanced Threat Infrared Countermeasure (ATIRCM) is a sub-set of the SIIRCM program, and is specifically comprised of an active IR jammer for use on helicopters and the passive Common Missile Warning System. CMWS was originally to be used on both helicopters and fixed wing aircraft, but the Air Force and Navy have dropped out of the program. Currently, the only application of ATIRCM/CMWS will be on Army and Special Operations Command helicopters. Currently, the Army controls the funding for both the Army and Special Force's programs.

The Army's lead platforms for Engineering and Manufacturing Development (EMD) are the MH-60K and the EH-60. Previously, the AV-8B and the F-16 were the lead aircraft for the Navy and Air Force. Two ATIRCM laser jam heads are the normal configuration for most helicopters and transport aircraft, though only one jam head is currently planned for tactical helicopters. CMWS is intended to provide passive missile detection, threat declaration, positive warning of a post-launch missile that is homing on the host platform, countermeasures effectiveness assessment, false alarm suppression, and cues to other on-board systems. For the helicopter applications, the ATIRCM adds active directional countermeasures via an arc lamp and laser. ATIRCM is required to demonstrate integration with the Army's Suite of Integrated Radio Frequency Countermeasures.

The Joint Project Office (JPO) was relocated from St Louis, Missouri, to Huntsville, Alabama, during FY97 as part of a Base Realignment and Closure. After the relocation, the JPO was established and staffed as a separate Project Manager Office directly under Program Executive Officer Aviation. In 1999, CMWS sensor and jam head laser production difficulties, Operational Flight Plan development delays, and other EMD issues resulted in a cost and schedule breach and subsequent re-baselining. Performance in tests allowed ATIRCM/CMWS to enter into government development testing in early FY01. In response to the September 11, 2001, attacks, and based on the positive test results on the CMWS in FY01 (described below), this sensor subsystem was recommended for accelerated fielding. Subsequently the Army awarded a limited production contract to BAE for up to 96 CMWS systems. Also, in FY01 the Army integrated the program into the Aircraft Survivability Equipment's office, under the Information, Electronic Warfare and Surveillance Office.



The Suite of Integrated Infrared Countermeasures/Common Missile Warning System is intended to enhance aircraft survivability against advanced infrared guided missiles. It includes a laser jammer and missile warning system.

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During FY01, the program manager decided to make a change in the CMWS hardware configuration. All of the Test and Evaluation (T&E) was planned using the EMD version of CMWS. In parallel, the UK is buying a production version of CMWS that is advertised to have better performance, fewer parts, and greater reliability. Although the EMD version of CMWS has performed well, the Program Manager decided that the cost, reliability and performance advantages of the so-called production design upgrade (PDU) version of CMWS were sufficient to warrant a change late in the test program.

TEST & EVALUATION ACTIVITY

Considerable T&E was accomplished in FY01, including false alarm tests at Eglin Air Force Base (Development Test (DT)), live fire tests at the Aerial Cable Facility at White Sands (DT/Operational Test), captive seeker tests at Fort Huachuca (DT/Operational Test), and the sled test at Holloman. The only test activity for this program in FY02 was the live fire shots against the CMWS system that was housed in a QF-4G drone. This test was required originally as part of the fixed wing operational assessment prior to the Air Force and Navy leaving the program. Since the modifications to the drone were already underway, the test was conducted. The drone tests were hampered by a number of test resource issues, resulting in a limited test, with only 8 of the planned 12 shots being executed. All the shots were declared by the CMWS, and flares were automatically dispensed. The flares successfully countered the missiles for each shot. Although a good indicator that the CMWS could be effective on fixed wing aircraft against the short range Surface-to-Air Missiles, more complete testing would be required to evaluate the system's performance against a fighter type aircraft at different aspect angles and altitudes.

Hardware-in-the-Loop (HITL) modeling capabilities are essential to providing an assessment of the operational effectiveness and operational suitability of the ATIRCM/CMWS system. Actual missile firings and drone target requirements have been reduced from nearly 400 to 175 events by developing new T&E concepts that rely on Modeling and Simulation (M&S). Contractor HITL testing in FY01 was very beneficial to validating M&S conclusions.

TEST & EVALUATION ASSESSMENT

The ATIRCM/CMWS has demonstrated reasonably good performance to date. The tests have shown the need to modify the software for certain operational conditions and these modifications need to be re-evaluated during subsequent testing, especially with live fire shots at the aerial cable facility. Although the CMWS performance has been satisfactory to date, testing in FY01 surfaced some suitability problems with the IR jam head. Although effective, several reliability problems were experienced during the open air testing as well as during the reliability development growth test that was started and then stopped in August 2001. The jam head is undergoing a re-design to address the shortfalls.

With the changes that will be incorporated into the laser jam head and the limited testing on the newer PDU CMWS sensor, future operational test and evaluation (OT&E) needs to be performed on the system. The newer PDU sensor has performed adequately in the tests it has undergone, but it has not undergone as much testing as the previous EMD version. The PDU sensor is much lower risk than the updates to the ATIRCM jam head redesign. The first CMWS units that are produced during low-rate initial production should undergo DT regression testing; then the updated system should undergo a comprehensive OT&E to ensure that the upgrades are effective and suitable. Due to funding issues within the Army this year, the schedule for future OT&E is not firm. The Army is tentatively planning to conduct both the DT and OT&E tests in FY03, but there has not yet been a TEMP update that officially states when these tests will be conducted.

M&S are critical elements of the T&E program because the matrix of potential missile-aircraft interactions to be evaluated would require a substantial increase in the number of test firings. Modeling will be used to examine many of those interactions while simultaneously reducing program costs. The development of the end-to-end model has progressed this past year to the point that it now can be used for test predictions and some scenario evaluations. However, it is yet to be completely verified and validated. In addition, the model needs to be accredited prior to use for operational evaluation. The verification, validation, and accreditation requirement is a significant challenge.

The overriding issues for SIIRCM/CMWS is the need to conduct OT&E on the upgraded SIIRCM/CMWS and for the Test and Evaluation Master Plan to be updated to reflect the actual test schedule and planned conduct of the tests. The dates of testing will have to be decided in conjunction with the yet-to-be determined acquisition plan.